Science Skills Progression

Eden Park Primary School Academy

In order to ensure broad and balanced coverage, we follow these principles:

- **As much as is appropriate, link science in to Learning Experiences. Where this results in a change of skills, ensure coverage of skills remains complete and balanced across the 2 year cycle.**
- **As much as is appropriate, teach science during Wild for Learning sessions and through practical and investigative tasks.**
- **Each term has a science topic, where the content skills and knowledge should be taught. This should be assessed using giggle sheets pre- and post-topic. Planning is available using the 'Learning Challenge' scheme of work, although this can be freely adapted as long as the skills remain.**
- **Within each science topic, the working scientifically skills should be explicitly taught, modelled and practised. Children should cover all of these enquiry skills for their phase at least once during the two-year cycle.**
- **The working scientifically skills should be assessed throughout the topic, with a record of children's depth of understanding recorded on Classroom Monitor. This should be used by teachers when planning to cover gaps and targets in scientific enquiry.**
- **The foundation stage covers the objectives and skills within each year.**
- **Objectives in bold are interim statements which need evidence in the children's science book to build a picture of attainment.**

FOUNDATION STAGE		
ELG He/she knows about similarities and differences in relation to places, objects, materials and living things. He/she talks about the features of his/her own immediate environment and how environments might vary from one another. He/she makes observations of animals and plants and explains why some things occur, and talks about changes. **Topics:**		
Exploring and Observing	**Knowledge and Understanding**	**Communicating**
I look closely at similarities and differences between things in the world. I explore and notice patterns in the natural world e.g. all the birds we can see in the sky have wings. I explore and notice patterns in the results of experimenting e.g. every time I drop the marbles in the water, they sink. I look closely at changes e.g. the way a caterpillar changes into a butterfly or a leaf changes colour. I make observations of animals and plants through pictures, words or photographs.	I have a developing understanding of growth, decay and changes over time. I know about similarities and differences in relation to places. I know about similarities and differences in relation to objects and materials. I know about similarities and differences in relation living things.	I comment and ask questions about aspects of my familiar world such as the place where I live or the natural world. I can talk about some of the things I have observed such as plants, animals, natural and found objects. I can talk about why things happen and how things work. I can talk about the features of my own immediate environment and how environments might vary from one another. I can talk about changes.

Year 1 and 2					
Content Skills and Knowledge Autumn Cycle A		**Content Skills and Knowledge Spring Cycle A**		**Content Skills and Knowledge Summer Cycle A**	
Seasonal Changes (driver subject in 'A Jolly Farmer') **Observe changes across the four seasons**; Observe and describe weather associated with the seasons and how day length varies.	**Human Body and Living Things** **Identify, name, draw and label the basic parts of the human body and say which part of the human body is associated with each sense.** **Notice that animals, including humans, have offspring, which grow into adults;** **Find out about and describe the basic needs of animals, including humans for survival (water, food and air);** **Describe the importance for humans of exercise, eating the right amount of different types of food, and hygiene.**	**Everyday Materials** **Distinguish between an object and the materials from which it is made;** **Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock;** **Describe the simple physical properties of a variety of everyday materials;** **Compare and group together a variety of everyday materials on the basis of their simple physical properties.**	**Sound (driver subject for 'The Rhythm of Africa)** Observe and name a variety of sources of sound, noticing that we hear with our ears Recognise that sounds get fainter as the distance from the sound source increases.	**Plants** Identify and name a variety of common, wild and green plants, including deciduous and evergreen trees; Identify and describe the basic structure of a variety of common flowering plants, including trees.	**Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals;** **Identify and name a variety of common animals that are carnivores, herbivores and omnivores;** Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets);
Content Skills and Knowledge Autumn Cycle B		**Content Skills and Knowledge Spring Cycle B**		**Content Skills and Knowledge Summer Cycle B**	
The Crunch (working scientifically focus) **All WS objectives to be covered using one unit of work (see below)**	**Light and Dark (driver subject in 'The Light Fantastic')** **Observe changes across the four seasons;** Observe and describe weather associated with the	**Materials (driver subject for 'The 3 Little Pigs')** **Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, rock, brick, paper and cardboard for particular uses;**	**Chicken Husbandry** **Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants,**	**Animals and Habitats (driver subject for The Really Wild Show)** **Explore and compare differences between things that are living, dead and things that have never been alive**;	**Plants** **Observe and describe how seeds and bulbs grow into mature plants;** Find out and describe how plants need water, light and suitable temperature to grow and stay healthy.

	seasons and how day length varies.	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**and how they depend on each other;** **Notice that animals, including humans, have offspring, which grow into adults;** **Find out about and describe the basic needs of animals, including humans for survival (water, food and air);**	**Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other;** **Identify and name a variety of plants and animals in their habitats, including micro-habitats;** **Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.**	
Working Scientifically Skills					
Planning Investigations		**Conducting and Recording Experiments**		**Reporting Findings and Concluding**	
Ask simple questions when prompted (Band 1) Ask simple questions (Band 2). Suggest ways of answering a question (Band 1). Recognise that questions can be answered in different ways (Band 2).		Make relevant observations (Band 1). Observe closely, using simple equipment (Band 2). Perform simple tests (Band 2). With prompting, suggest how findings could be recorded (Band 1) Record and communicate their findings in a range of ways and begin to use simple scientific language (Band 2).		Recognise findings (Band 1). Gather and record data (Band 1) Identify and classify (Band 2). Use observations to suggest answers to questions (Band 1). Use their observations and ideas to suggest answers to questions (Band 2).	

Year 3 and 4					
Content Skills and Knowledge Autumn Cycle A		**Content Skills and Knowledge Spring Cycle A**		**Content Skills and Knowledge Summer Cycle A**	
Light I can recognise that I need light in order to see things and that dark is the absence of light. I notice that light is reflected from surfaces. I recognise that light from the sun can be dangerous and that there are ways to protect my eyes. I recognise that shadows are formed when the light from a light source is blocked by a solid object. I can find patterns in the way that the size of shadows change.	**Working Scientifically (driver for Sir Henry's Quest)** No specific content skills – entire skills focus is scientific Enquiry	**Forces and Magnets** I compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. **I observe how magnets attract or repel each other and attract some materials and not others**. I compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. I describe magnets as having two poles. I predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Animals including Humans** **I describe the simple functions of the basic parts of the digestive system in humans.** I identify the different types of teeth in humans and their simple functions. **I construct and interpret a variety of food chains, identifying producers, predators and prey.**	**States of Matter (driver subject for 'River Rapids')** I compare and group materials together, according to whether they are solids, liquids or gases. I observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). I identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Plants (Driver subject for 'Following in Darwin's footsteps')** **I identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.** I explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. **I investigate the way in which water is transported within plants.** I explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
Content Skills and Knowledge Autumn Cycle B		**Content Skills and Knowledge Spring Cycle B**		**Content Skills and Knowledge Summer Cycle B**	
Reversible and irreversible changes I observe that some materials change state when they are heated or cooled, and measure or research	**Plants/Animals (Driver for 'The Jungle Book')** I recognise that living things can be grouped in a variety of ways	**Electricity (Driver for 'Festival of Brixham')** I identify common appliances that run on electricity	**Rocks (Driver for 'Time Tunnel')** **I compare and group together different kinds of rocks on the basis of their**	**Sound (driver for 'Sounds of the Sea')** **I identify how sounds are made, associating some of them with something vibrating**	**Animals including humans (driver for 'Smashing Summer Smoothies')** **I identify that animals, including humans, need the right types and amount of**

the temperature at which this happens in degrees Celsius (°C). I identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**I explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment** I recognise that environments can change and that this can sometimes pose dangers to living things.	**I construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers** I identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery I recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit I recognise some common conductors and insulators, and associate metals with being good conductors.	**appearance and simple physical properties** **I describe in simple terms how fossils are formed when things that have lived are trapped within rock** I recognise that soils are made from rocks and organic matter.	**I recognise that vibrations from sounds travel through a medium to the ear** **I find patterns between the pitch of a sound and features of the object that produced it** **I find patterns between the volume of a sound and the strength of the vibrations that produced it** **I recognise that sounds get fainter as the distance from the sound source increases.**	**nutrition, and that they cannot make their own food; they get nutrition from what they eat** I identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Working Scientifically Skills		
Planning Investigations	**Conducting and Recording Experiments**	**Reporting Findings and Concluding**
Ask relevant questions when prompted (Band 3). Ask relevant questions (Band 4). Set up simple and practical enquiries, comparative and fair tests (Band 3 and 4). Set up comparative tests (Band 3). Plan different types of scientific enquiries to answer questions (Band 4).	Make systematic observations, using simple equipment (Band 3). Make systematic and careful observations using a range of equipment, including thermometers and data loggers (Band 4). Use standard units when taking measurements (Band 3). Take accurate measurements using standard units, where appropriate (Band 4). Record findings in various ways (Band 3).	Suggest how findings could be reported (Band 3). Report on findings from enquiries, including oral and written explanations, of results and conclusions (Band 4). Report on findings from enquiries using displays or presentations (Band 4). Gather and record data about similarities, differences and changes (Band 3). Identify differences, similarities or changes related to simple scientific ideas and processes (Band 4).

	Record findings using simple scientific language, drawings and labelled diagrams (Band 4). Record findings using keys, bar charts, and tables (Band 4). With prompting, use various ways of recording, grouping and displaying evidence (Band 3). Gather, record, classify and present data in a variety of ways to help to answer questions (Band 4).	With prompting, suggest conclusions that can be drawn from data (Band 3). Use straightforward scientific evidence to answer questions or to support their findings (Band 4). Suggest possible improvements or further questions to investigate (Band 3). Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Band 4).

Year 5 and 6					
Content Skills and Knowledge Autumn Cycle A		**Content Skills and Knowledge Spring Cycle A**		**Content Skills and Knowledge Summer Cycle A**	
Earth and Space **describe the movement of the Earth, and other planets, relative to the Sun in the solar system** describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies **use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.**		**Aging and Life Cycles Life Cycles and Evolution** **describe the changes as humans develop to old age.** **recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago** **recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents** **identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.**	**Chemical Reactions (driver for 'What a Load of Rubbish')** **demonstrate that dissolving, mixing and changes of state are reversible changes** explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	**Humans and anatomy** **identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood** **recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function** describe the ways in which nutrients and water are transported within animals, including humans.	**WfL Sex ed** **describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird** **describe the life process of reproduction in some plants and animals.**
Content Skills and Knowledge Autumn Cycle B		**Content Skills and Knowledge Spring Cycle B**		**Content Skills and Knowledge Summer Cycle B**	
Classification/Adaptation of living things **describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including**	**Materials and working scientifically (driver for 'CSI Brixham')** **compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity**	**Light** **recognise that light appears to travel in straight lines** **use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye**	**Electricity** associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit **compare and give reasons for variations in how**		**Forces (driver for 'May the Force Be With You')** **explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object**

micro-organisms, plants and animals **give reasons for classifying plants and animals based on specific characteristics.**	**(electrical and thermal), and response to magnets** **know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution** **use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating** give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	**explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes** **use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.**	**components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches** **use recognised symbols when representing a simple circuit in a diagram**.		**identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.**

Working Scientifically Skills		
Planning Investigations	**Conducting and Recording Experiments**	**Reporting Findings and Concluding**
Plan different types of scientific enquiries to answer questions (Band 6). Recognise and control variables where necessary (Band 6). With prompting, plan different types of scientific enquiries to answer questions (Band 5). With prompting, recognise and control variables where necessary (Band 5).	Take precise measurements using standard units (Band 5). Take measurements with increasing accuracy and precision (Band 6). Take repeat readings when appropriate (Band 6). Record data and results (Band 5). Record data using labelled diagrams, keys, tables and charts (Band 5). Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar charts (Band 6).	With support, present findings from enquiries orally and in writing (Band 5). Report and presents findings from enquiries in oral and written forms such as displays and other presentation (Band 6). With prompting, identify that not all results may be trustworthy (Band 5). Suggest how evidence can support conclusions (Band 5). Identify scientific evidence that has been used to support or refute ideas or arguments (Band 6).

	Use line graphs to record data (Band 5). Record data and results of increasing complexity using line graphs (Band 6).	Use test results to make predictions to set up further comparative and fair tests (Band 6). Suggest further comparative or fair tests (Band 5).